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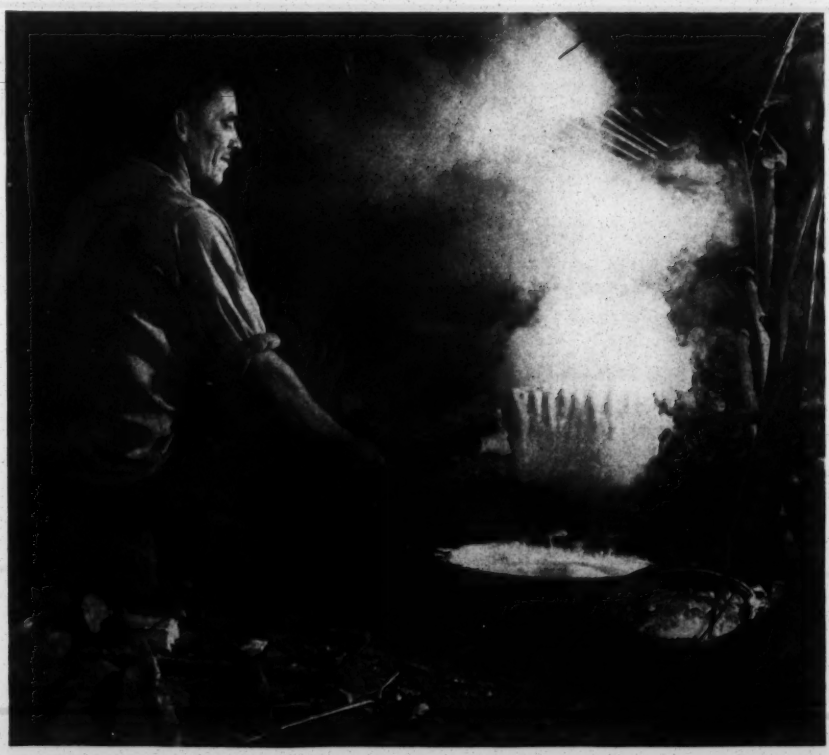

C. I. A. A

IN THE AMAZON JUNGLE, A WORKER "BARBECUES" A ROLL OF NATURAL RUBBER

The fire coagulates liquid latex into solid rubber. Rotating the stick, the craftsman occasionally pours on more latex from the pan. Working independently, and hidden in the Brazilian rain forest for weeks on end, he and his colleagues are hard for the census-taker to track down (page 5).

Norway Rebuilds Its Merchant Marine

NORWAY'S merchant fleet, for which new units have been ordered at a cost of more than $340,000,000, plays a vital role in that nation's economy, and in world shipping as well.

Before it was overrun by the Germans in 1940, Norway ranked fourth among the world's leading merchant shippers. Although topped in total tonnage by British, American, and Japanese ships, the Norwegian fleet actually led the field in proportion to the country's population.

Norway Provides a World-wide Sea-delivery Service

Each of Norway's nearly three million inhabitants was represented by a little more than one and a half gross tons of shipping. This compared with less than one-tenth of a ton per person in the United States.

Norwegian ships ply far sea lanes. Before the war, less than three per cent of the total tonnage was used in coastal traffic. The rest was accounted for by whaling boats, by vessels carrying Norway's foreign trade, and, most important, by ships handling a vast and profitable "sea-delivery service." Panama Canal records show more than 700 Norwegian entries for 1939.

When the Germans invaded, more than a thousand ships of Norway's merchant marine were safely out of reach. Every skipper followed his government's orders to report to British or Allied ports.

In the crucial Battle of Britain, these ships brought half of England's oil and gasoline supplies, a third of its food and battle needs. They served in the evacuation of Dunkerque and Crete, and in the armada that in November, 1942, opened the North African campaign.

After the European war was won, Norwegian bottoms helped transport war materials to the Orient for the final effort before VJ Day.

Geography Makes Sailors of Norwegians

A long, narrow country stretching from the North Sea to the Arctic Ocean, Norway occupies Europe's northernmost mainland. But Hammerfest, about 300 miles north of the Arctic Circle, has a comparatively mild climate. This is due to the Gulf Stream, which keeps most of Norway's Atlantic and Arctic ports ice-free.

Geography influenced Norwegians to "go down to the sea in ships." With an area only a little larger than that of New Mexico, Norway has a jagged, fjord-cut coast line of more than 12,000 miles. Most of its people live on or near the coast. Its northern climate and mountain-crumpled surface discourage large-scale farming (illustration, page 4).

Norway's sea-faring warriors and explorers have made history from the time of the Vikings. The development and expansion of the merchant marine, however, came only after the 18th century. Oslo, the capital, is the country's leading port (illustration, page 2).

During World War I, neutral Norway's extensive fleet paid heavily for keeping afloat. Nearly half of it was lost, the largest proportion for any country, neutral or belligerent.

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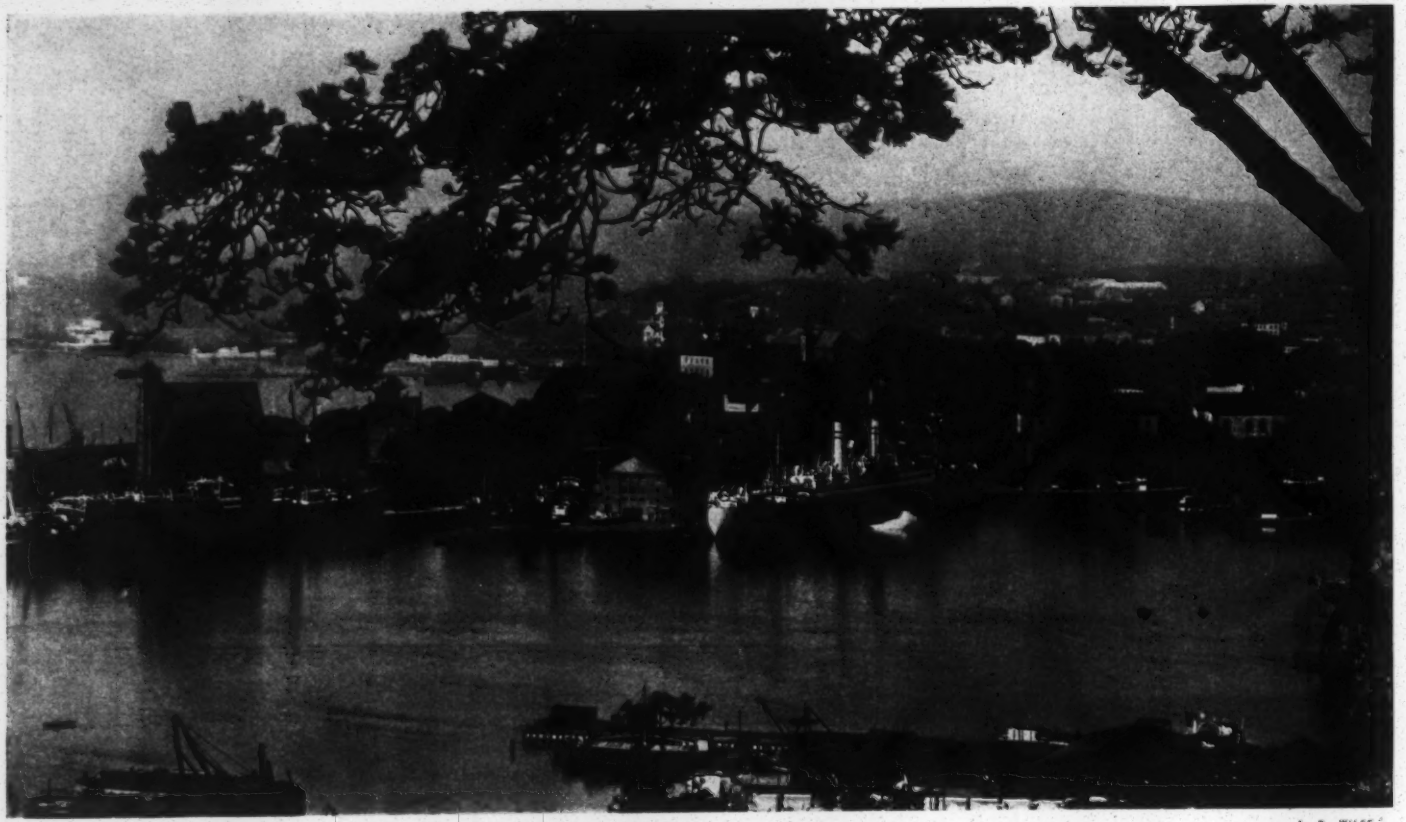

A. B. WILSE

AS YANKEE CLIPPERS ONCE SPREAD AMERICA'S FAME, THESE STEAMERS IN OSLO'S HARBOR CARRY THE NAME NORWAY TO THE EARTH'S ENDS

This leading port of a leading maritime nation (page 3) is built on wooded hills encircling the head of Oslofjord, a deep indentation in Norway's southern coast. Behind the docks, on the tongue of land sticking into the harbor, stands twin-towered Akershus Castle, once a mighty fortification but now a prison and arsenal. For three centuries the city was called Christiania after Christian IV of Denmark, whose domains included Norway. In 1925, Norwegians named it Oslo after a medieval settlement.

Hemisphere Nations Plan 1950 Census

THE first complete, simultaneous census of Western Hemisphere nations, planned for 1950 by inter-American census statisticians, involves exploration and mapping of vast but little-known regions of tropic heat and arctic cold. It also calls for unity of action among the 21 Pan-American nations, some of which have practically no experience in census-taking, and the Dominion of Canada.

The plan calls for training and equipping trail-blazing enumerators to search out primitive peoples in undeveloped regions. In the end, the hemisphere census will supply vital statistics and basic facts on occupations and standards of living of an estimated 200,000,000 North and Central Americans and an estimated 100,000,000 South Americans.

South America Is Peopled by Diverse Groups

Following the United States pattern, Bolivia, Brazil, Chile, Peru, and other South American countries have taken their census in one or more decennial years. But where United States censuses have broadened in scope to include such data as years of schooling, cost of dwelling, and rent paid, the censuses of South American countries have been too few and too incomplete to gauge population trends and give a true picture of a nation's life.

White European immigrants of the past century of independence dominate most of Argentina, Uruguay, and southern Brazil. Iberian-Indian stock, the result of three centuries of Spanish and Portuguese exploitation, prevails along the coasts and the lower Amazon. Some 12,000,000 Negroes, descendants of slaves, live in Brazil and Colombia. Christianized Indians dominate the Andean highlands.

Primitive Indians inhabit the thick forests of the Amazon basin, where census-taking will be hardest. The Brazilian rubber trade (illustration, cover), at the turn of the 20th century and again during World War II, held brief promise of a westward push in the Amazon basin, but the tropical wilderness did not yield.

To primitive dwellers of the western Amazon country, security still lies in secrecy. Family units of 60 or more Indians build a thatched-roof community house on a clearing back from the rivers, which are highways for enemies. In about three years their house is falling apart, their crops have depleted the soil of the clearing, and telltale paths have been worn from the river to their site. Then they find a new, concealed spot many miles away, move to it, and rebuild.

Largest Forested Area in the World

In forested Brazil alone the census-takers have an area greater than that of the continental United States. The South American continent, more than double the area of the United States plus Alaska, holds the long Andes chain with the highest peaks in the world outside Asia. Remnants of primitive Indian tribes live near Cape Horn, on the southernmost continental mainland and near-by islands.

Primitive Indians live, too, in the tropical forests of Central America and Mexico (illustration, page 6). About two-fifths of all Latin America

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Once more, in World War II, close to half of Norway's tonnage was destroyed, making its replacement an important item on the nation's recovery program.

In addition to the merchant marine, Norway has a large fishing fleet of many thousands of motor, steam, and sailing vessels. The cod fleet works primarily among the Lofoten Islands, along whose treacherous coasts swirls the Maelstrom. In prewar years this "land of the midnight sun" had so many visitors it was said that Norway had two seasons—winter time and tourist time.

NOTE: Norway is shown on the National Geographic Society's Map of Europe and the Near East. A price list of maps may be obtained from the Society's headquarters, Washington 6, D. C.

For additional information, see "The White War in Norway," in the *National Geographic Magazine* for November, 1945; "Norway, an Active Ally," March, 1943*; "Country Life in Norway," April, 1939*; "Life in a Norway Valley," May, 1935; and "Norway, a Land of Stern Reality," July, 1930. (*Issues marked with an asterisk are included on the special list of Magazines available to teachers in packets of ten for $1.00.*)

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 15, 1945, "Allies in Europe: 2. Norway."

A. B. WILSE

MOUNTAINS SHOULDERING INTO NORWAY'S PATCHY FARMS LEAVE THEM AN AVERAGE NINE ACRES EACH

Only four per cent of this rocky, sea-slashed land is arable. Hay in mountain meadows is carefully cut and racked to provide winter feed for the country's livestock population. In this misty valley the hay is literally hung up to dry on lines stretching between poles. Oats and barley are Norway's biggest grain crops. Great quantities of wheat, rye, and corn must be imported.

NATIONAL PARK SERIES: No. 8

Bryce Canyon, Where "Rocks Stand Like Men"

BRYCE CANYON'S blaze of highly colored and weirdly eroded rocks (illustration, page 8) suddenly bursts into view only after the visitor reaches the very rim of the 1,000-foot drop. There one sees, not the usual canyon with two sides, but one vast slope of fantastic salmon-pink rocks —really the edge of a plateau falling away into the desert.

The story of Bryce's distinctive scenery is erosion. The rocks of this southern Utah fairyland are soft—of the most recent geologic age—and water, wind, temperature changes, and chemical agencies working for millions of years have shaped the pinnacles, domes, spires, and temples that feature the amphitheaterlike slope.

Three National Parks Reveal Earth's History

The Indian name for Bryce Canyon is "Unka-timpe-wa-wince-pock-ich," which means "red rocks standing like men in a bowl-shaped canyon." The park lies just 25 miles southeast of one of the main highways between Salt Lake City, Utah, and Los Angeles, California.

Visitors to Bryce often travel to Zion, near by in south Utah, and to Grand Canyon, not too far distant in north Arizona. Park rangers tell them that these three canyons, like mammoth incisions of a surgeon's knife, lay bare nearly the entire geologic life of the earth. Speaking in terms of human development, Grand Canyon is geology's Babylon and Rome, Zion is the Middle Ages, and Bryce is current history.

Once the area now covered by Bryce and Zion canyons was at the bottom of the sea. Later broad rivers traversed its surface. Also in the past, desert conditions prevailed. During these changes the present pink, red, and cream rocks were deposited as unlovely gravel, sand, and ooze. The weight of accumulated layers hardened the mass into rock.

After formation of the rock strata the entire region was uplifted to nearly two miles above sea level. The lifting of such a large area caused cracks, or faults, which exposed the underlying rocks. This left them open to erosion, the sculptor who, with unseen fingers, carved the "rocks standing like men" on the faulted slopes of Bryce Canyon.

Winter Storms May Close Roads in the Park

Queer but lifelike formations—among them the Cathedral, Fairy Castle, Mormon Temple, Wall of Windows, Queens Garden, and Steamboat Point—make Bryce resemble a cavern without a roof. Pinnacles left by quirks of erosion look like stalagmites which build up in caves.

The park is accessible all year. Main roads are kept open except during and following winter storms. There are no winter accommodations in the park area. Spring, summer, and autumn vacationists have a choice of a room in the lodge, or a cabin. Campers may pitch tents in a public auto camp. These facilities, plus stores and eating places, cluster near park headquarters, on the canyon rim.

Paved roads and hiking and riding trails reach all points of interest in the park. Auto caravans led by a ranger naturalist are arranged daily for those with automobiles. Bus transportation is available to others.

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from the Rio Grande south is forest-covered, the largest area of timbered land in the world.

In Canada, the dominion's Bureau of Statistics keeps close watch on population with careful censuses every ten years. In the forests of provinces bordering the United States, not far from large centers of population, are aboriginal tribes that defy census-taking. Some 100,000—about nine-tenths of these natives—live on Indian reservations where the census can be readily taken.

A glance at a map gives the picture in the islanded vastness of the dominion's Northwest Territories, where 11,000 fur-clad Canadians are scattered over 1,300,000 square miles of land.

NOTE: Remote regions where census-taking is difficult may be located on the Society's Map of North America; Map of Mexico, Central America, and the West Indies; and Map of South America.

FREDERICK SIMPICH

ONLY 200 MILES SOUTH OF THE BORDER, HEMISPHERE CENSUS-TAKERS MUST SOLVE THE PROBLEM OF COUNTING SUCH GROUPS AS THIS

In the Gulf of California, on Tiburón Island, live the remnants of Mexico's Seri Indian tribe. Sharing brush huts with their dogs and painting their faces with guano, these people are among the most primitive in all America. Unlike most Western Hemisphere aborigines, they do not farm, but live solely on the scant natural bounty of their desert-island habitat—shellfish, turtles, and cactus fruit. Other Seri groups live along the near-by Sonora mainland coast.

In the years before the war, the island of Ireland had nearly five million cattle, between three and four million sheep, and more than a million hogs. Half a million head of cattle were exported last year.

Ireland is less than one-eighth the size of Texas. Yet in relation to area, it has five times as many cattle, more than twice as many sheep, and almost three times as many hogs.

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Cranberry Stands by for Thanksgiving Feast

AS goes southeastern Massachusetts, so goes the nation. The saying in this case applies to cranberries, not to politics.

The Cape Cod district of the Bay State normally produces two-thirds of the country's annual ruby tide of the tart berry that adds tradition as well as zest to America's Thanksgiving and Christmas turkey feasts. The 1946 harvest runs true to the two-thirds rule.

Occasionally—as, for example, in 1944—the Cape Cod crop falls far short of expectations, and the crimson holiday berry is scarce in the nation's grocery stores. Turkey eaters, honing their appetites this Thanksgiving, however, will have plenty of tangy cranberry sauce.

Western Cranberry States Break Their Own Records

Thousands of harvesters, working with slotted scoops (illustration, page 10) and nimble fingers through most of September and October, combed the nation's cranberry bogs and gathered a total yield of more than 800,000 barrels. The crop is second only to the 1937 harvest of 877,300 barrels. In 1942, as well as in 1937, Massachusetts marshes produced a few thousand barrels more than their estimated total of 550,000 barrels for this autumn's crop.

New Jersey, long second among cranberry-growing states, produced less than one-tenth of the 1946 harvest and fell below its ten-year average. But each of the western cranberry states—Wisconsin, Washington, and Oregon—achieved a new quantity record. Wisconsin supplied one-sixth of the total crop for 1946.

The birdlike appearance of the bud and curving stem of the low bush in early summer gave the fruit the name crane-berry. Custom shortened it to its present form.

Although varieties of cranberry grow wild in Nova Scotia and northern Europe, the largest—*Vaccinium macrocarpum*—is native only to the acid swamps in the northern United States and Canada.

When, in 1620, the Pilgrims at Plymouth celebrated their first Thanksgiving and ate wild turkey, cranberries colored the marshes close to their settlement. It was only a century ago, however, that the era of cranberry cultivation dawned on Cape Cod and in New Jersey. Cranberry pioneers moved into central Wisconsin bogs in the 1850's. A small start was made on the Pacific coast in 1885.

Berries Reach the Stores in Several Forms

Today, more than $50,000,000 is invested in the scientific business of growing and processing cranberries. The industry puts to use about 50 square miles of land that previously lay waste, unsuited to any other type of agriculture. The new crop, worth about $9,000,000, reaches the grocery stores in the form of sauce, juice, jelly, and dehydrated fruit, as well as the raw, red berries that are sold by the quart.

It is expensive, tedious work to level and sand bogland and start new cranberry crops. The bogs are level areas along a stream or near a water supply. They must be crisscrossed by narrow ditches so that they can be flooded to protect the trailing, vine-like bushes from insect enemies and

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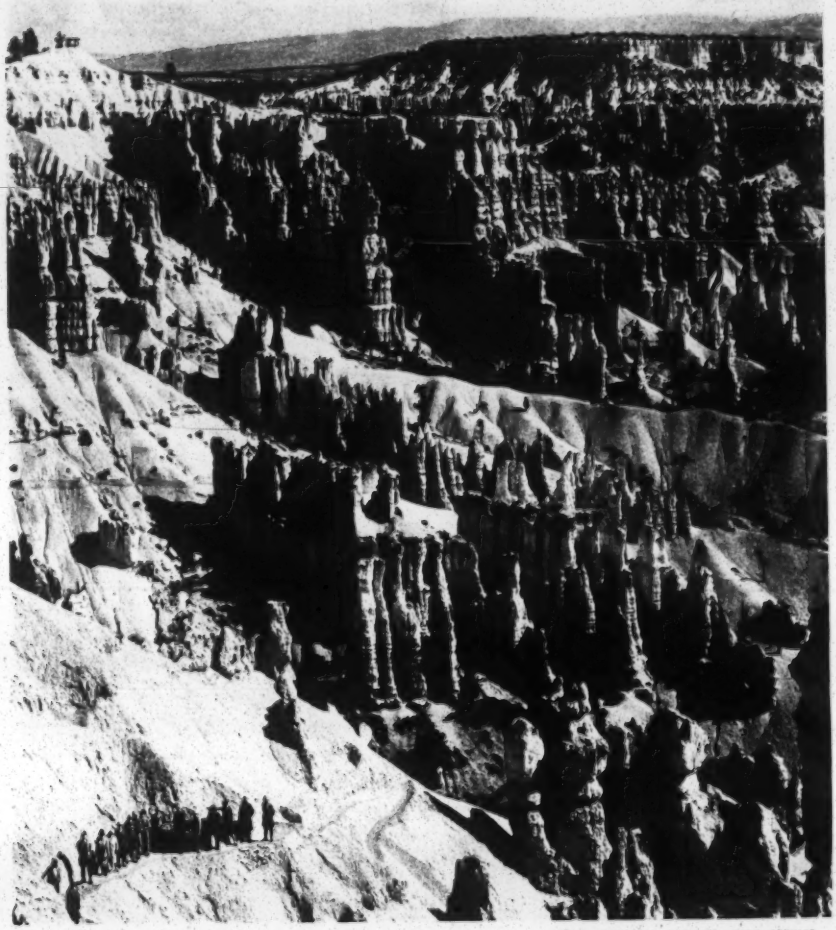
The only method of entering the park itself is by highway. Bus lines connect with Cedar City, Utah, the nearest rail station.

Ebenezer Bryce settled in 1875 at the lower entrance to the canyon. Asked what he thought of the scenic area that was later to attract 100,000 visitors a year, Bryce, a cattleman, said that it was a terrible place "to lose a cow." When first authorized by Congress, the area was called Utah National Park. Four years later, in 1928, Bryce Canyon National Park was formally created by presidential proclamation.

NOTE: Bryce Canyon National Park may be located on the Society's Map of The Southwestern United States.

For additional information, see "Utah, Carved by Winds and Waters," in the *National Geographic Magazine* for May, 1936*; "Western National Parks Invite America Out of Doors," July, 1934; and "Nature's Scenic Marvels of the West," July, 1933*.



G. A. GRANT, COURTESY NATIONAL PARK SERVICE

BELOW BRYCE'S SUNRISE POINT, HIKERS DESCEND INTO QUEEN'S GARDEN AND QUEEN'S CASTLE

Eruptions Forecast for "Tin Can Island"

NIUAFOŌ, a doughnut-shaped volcanic island in the Tonga group of the south Pacific, is well known to stamp collectors as "Tin Can Island." In recent years, its periodic volcanic activity also brought it to the attention of volcanologists and posed the question, "Can experts foretell volcanic eruptions?"

The destructive upheaval on Niuafoō last September was roughly predicted eleven years ago in the *National Geographic Magazine*. Dr. Thomas Jaggar, well-known volcanologist now with the University of Hawaii, wrote in the July, 1935, issue of the *Magazine* that the Niufoō eruptions might be described as "punctuation marks in a continuing process."

Islanders' Evacuation Similar to Bikini Removal

Using the dates of outbreaks previous to one in 1929, Dr. Jaggar figured the average interval at 16 years, giving "reason to expect another lava eruption about 1945." While this was not offered as an accurate forecast, as he pointed out, records of past eruptions do seem to provide the basis for rough predictions.

The fear that the September outbreak might be only the start of a continuing upheaval prompted authorities to order the removal of the natives. After the fashion of the evacuation of Bikini in the face of the planned atom-bomb experiment, the 1,200 Niaufoō islanders will be evacuated to the Vavau group of islands. Their new home lies 250 miles southward from Niuafoō.

One of the British-protected Tonga group that stretches northeast of New Zealand, Niuafoō is an active volcano, with its top blown off, leaving a lava rim surrounding a lake. From the air it appears as a huge, crownless hat.

Living on the precarious "brim" of their island, the people of Niuafoō have suffered many eruptions, with results ranging from inconvenience to tragedy. An outburst in 1853 killed between 60 and 70 people of Ahau village, including the headman from under whose house the fiery lava stream spouted.

According to legend, the headman had courted disaster. Having founded his own village in defiance of the island's high chief, he called on the gods to destroy it if his action was wrong.

Mail Came in Cans Dumped from Ships

The 1886 and 1929 explosions, on the other hand, brought no loss of human life to Niuafoō, thanks to quick abandonment of the danger areas, and to favorable trade winds.

The Niuafoō islanders are Polynesians (illustration, page 12). Civilized and Christianized, they are subjects of the Tonga queen, who stands a regal six feet three and wears a trailing ermine robe as a badge of her authority.

The fertile tropic isle—covering an area of about ten square miles—is green with banana trees and coconut palms. But springs and streams are lacking for a water supply, and no harbors break the black, foam-sprayed lava cliffs.

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unseasonable frosts.

When the autumn picking season arrives, the bogs are completely dry. Various types of mechanical pickers have been in experimental use this year on some of the larger "plantations," in an attempt to do away with the slower hand-picking and cumbersome hand scoops. Some growers supplement dry-picking by flooding the carefully picked bog and collecting a final dividend of floaters from the surface of the water. Cranberries are sometimes cleaned and packed in the bog where they are picked.

NOTE: For further information about cranberries and the regions where they are grown, see "Cape Cod People and Places," in the *National Geographic Magazine* for June, 1946; "Revolution in Eating," March, 1942; and "New Jersey Now!", May, 1933.

EDWIN L. WISHERD

COMBING UP THE CRANBERRY CROP TAKES—AND MAKES—MUSCLE

Skimming a scoop through the short, close-growing stems of the cranberry plants is somewhat like combing a head of tangled hair. With a long-toothed, shovel-like implement, the picker combs the crimson berries from the dark green vines. After the bog has been picked over, it may be flooded. A scow with suction paddles is pushed through the water to pull loose the berries which still cling to the stems. They float to the surface and are skimmed up. This postscript to the harvest may add as much as 25 per cent to the cranberry crop. The ability of round cranberries to bounce like little rubber balls makes it possible for them to grade themselves. They roll down steps above which strips of cloth are so placed that the berries will bounce onto them and be steered into boxes. Rotten berries, unable to bounce over the cloth that separates good from bad, are left behind.

Because of the coastal dangers, ships bringing mail used to cast their packets overboard in sealed biscuit tins, to be ferried ashore by native swimmers. This service, which gained Niuafoō the nickname "Tin Can Island," was eventually dropped because of shark attacks. Small boats now replace the swimming postmen.

In 1930, Niuafoō was used by astronomers as a grandstand seat from which to observe the sun's total eclipse. The Tonga group as a whole was a valuable base of Allied operations in World War II. It contributed men and money to the cause.

NOTE: Niuafoō is shown on the Society's Map of the Pacific Ocean and the Bay of Bengal.

For additional information, see "Living on a Volcano," in the *National Geographic Magazine* for July, 1935.

THOMAS A. JAGGAR

FOR AN ISLAND CELEBRATION, TONGA WOMEN ON NIUAFOŌ DRESS UP IN THEIR BEST

Shells, beads, berries, leaves, beans, flowers, and grass help make up the ornamental costumes of these Polynesian girls. Their volcanic island home, halfway between Samoa and Fiji, is in danger of destruction from a new series of eruptions; so all residents have been ordered removed.